

# SEQUENCE LISTING

<110> DeJong Dr., Jeff

<120> Transcription Factors Related to TFIIA

<130> 119941-1053

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<170> PatentIn Ver. 2.0

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<211> 1617

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gaa ggt ata gag gaa caa gtt tta aaa gac ttg aag cag ctc tgg gaa 147

Glu Gly Ile Glu Glu Gln Val Leu Lys Asp Leu Lys Gln Leu Trp Glu

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acc aag gtt ttg cag tct aaa gca aca gaa gac ttc ttc aga aat agc 195

Thr Lys Val Leu Gln Ser Lys Ala Thr Glu Asp Phe Phe Arg Asn Ser

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atc caa tca cct ctg ttt act ctt cag ttg ccg cac agc ttg cac caa 243

Ile Gln Ser Pro Leu Phe Thr Leu Gln Leu Pro His Ser Leu His Gln

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aca ttg caa tcg tca aca gca tca tta gtt att cct gct ggt aga act 291

Thr Leu Gln Ser Ser Thr Ala Ser Leu Val Ile Pro Ala Gly Arg Thr

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ctt cca agt ttt acc aca gca gaa ctg ggc act tca aac tcc agt gca 339

Leu Pro Ser Phe Thr Thr Ala Glu Leu Gly Thr Ser Asn Ser Ser Ala

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Asn Phe Thr Phe Pro Gly Tyr Pro Ile His Val Pro Ala Gly Val Thr

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cta cag act gta tct ggt cac ctt tat aaa gtc aat gta cca att atg 435

Leu Gln Thr Val Ser Gly His Leu Tyr Lys Val Asn Val Pro Ile Met

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gtg aca gag act tct gga aga gca ggt att ctt cag cat cca att cag 483

Val Thr Glu Thr Ser Gly Arg Ala Gly Ile Leu Gln His Pro Ile Gln

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gln gln gln gln gln gln gln gln gln gln gln gln gln gln gln gln

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cca caa ttg aat cca tgg tct ctt caa gca act act gaa aaa tca cag 579

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Val Ser Gln Thr Asn Ser Asp Val Glu Ser Val Leu Ser Gly Ser Ala

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agc atg gct caa aat ctg cat gat gag tcc ctc tcc aca agc cct cat 867

Ser Met Ala Gln Asn Leu His Asp Glu Ser Leu Ser Thr Ser Pro His

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ggg gct ctc cac cag cac gtg act gat att cag ctt cat att ctt aaa 915

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Asn Arg Met Tyr Gly Cys Asp Ser Val Lys Gln Pro Arg Asn Ile Glu

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gaa ccc agc aac ata cct gta tca gag aag gat tct aat tct cag gtg 1011

Glu Pro Ser Asn Ile Pro Val Ser Glu Lys Asp Ser Asn Ser Gln Val

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gat tta agc att cgg gtt act gat gat gat att ggt gaa ata att caa 1059

Asp Leu Ser Ile Arg Val Thr Asp Asp Asp Ile Gly Glu Ile Ile Gln

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gta gat gga agc ggt gat aca tct tcc aat gaa gaa ata gga agt aca 1107

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aga gat gca gat gag aat gaa ttt cta ggg aat att gac ggg gga gat 1155

Arg Asp Ala Asp Glu Asn Glu Phe Leu Gly Asn Ile Asp Gly Gly Asp

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ctg aag gta cct gaa gaa gaa gct gac agt att tca aat gag gat tca 1203

Leu Lys Val Pro Glu Glu Glu Ala Asp Ser Ile Ser Asn Glu Asp Ser

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gcc aca aac agt agt gat aat gaa gac cct caa gta aac att gta gaa 1251

Ala Thr Asn Ser Ser Asp Asn Glu Asp Pro Gln Val Asn Ile Val Glu

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gag gac cct tta aat tct gga gat gat gtt agt gaa cag gat gtg cca 1299

Glu Asp Pro Leu Asn Ser Gly Asp Asp Val Ser Glu Gln Asp Val Pro

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Asp Leu Ile Asp Thr Asp Asn Val Val Val Val Val Val Val Val Val Val

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 His Arg Ser Lys Asn Lys Trp Lys Phe Tyr Leu Lys Asp Gly Val Met  
 445 450 455 460

tgt ttt gga ggg aga gac tat gta ttt gca aaa gcc att ggt gat gca 1443  
 Cys Phe Gly Gly Arg Asp Tyr Val Phe Ala Lys Ala Ile Gly Asp Ala  
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110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195

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Leu Phe Thr Leu Gln Leu Pro His Ser Leu His Gln Thr Leu Gln Ser  
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Ser Thr Ala Ser Leu Val Ile Pro Ala Gly Arg Thr Leu Pro Ser Phe  
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Thr Thr Ala Glu Leu Gly Thr Ser Asn Ser Ser Ala Asn Phe Thr Phe  
100 105 110

Pro Gly Tyr Pro Ile His Val Pro Ala Gly Val Thr Leu Gln Thr Val  
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Ser Gly His Leu Tyr Lys Val Asn Val Pro Ile Met Val Thr Glu Thr  
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Ser Gly Arg Ala Gly Ile Leu Gln His Pro Ile Gln Gln Val Phe Gln  
145 150 155 160

Gln Leu Gly Gln Pro Ser Val Ile Gln Thr Ser Val Pro Gln Leu Asn  
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Pro Trp Ser Leu Gln Ala Thr Thr Glu Lys Ser Gln Arg Ile Glu Thr  
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Val Leu Gln Gln Pro Ala Ile Leu Pro Ser Gly Pro Val Asp Arg Lys  
195 200 205

His Leu Glu Asn Ala Thr Ser Asp Ile Leu Val Ser Pro Gly Asn Glu  
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Tyr Ile Ser Leu Pro Gly Val Val Phe Ser Pro Gln Val Ser Gln Thr

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Asn Ser Asp Val Glu Ser Val Leu Ser Gly Ser Ala Ser Met Ala Gln

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Asn Leu His Asp Glu Ser Leu Ser Thr Ser Pro His Gly Ala Leu His

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Gln His Val Thr Asp Ile Gln Leu His Ile Leu Lys Asn Arg Met Tyr

290

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Gly Cys Asp Ser Val Lys Gln Pro Arg Asn Ile Glu Glu Pro Ser Asn

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Ile Pro Val Ser Glu Lys Asp Ser Asn Ser Gln Val Asp Leu Ser Ile

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Arg Val Thr Asp Asp Asp Ile Gly Glu Ile Ile Gln Val Asp Gly Ser

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Gly Asp Thr Ser Ser Asn Glu Glu Ile Gly Ser Thr Arg Asp Ala Asp

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Glu Asn Glu Phe Leu Gly Asn Ile Asp Gly Gly Asp Leu Lys Val Pro

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Glu Glu Glu Ala Asp Ser Ile Ser Asn Glu Asp Ser Ala Thr Asn Ser

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Asn Ser Gly Asp Asp Val Ser Glu Gln Asp Val Pro Asp Leu Phe Asp

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Thr Asp Asn Val Ile Val Cys Gln Tyr Asp Lys Ile His Arg Ser Lys

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Asn Lys Trp Lys Phe Tyr Leu Lys Asp Gly Val Met Cys Phe Gly Gly

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Arg Asp Tyr Val Phe Ala Lys Ala Ile Gly Asp Ala Glu Trp

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&lt;213&gt; Homo sapiens

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&lt;222&gt; (115)..(3660)

&lt;400&gt; 3

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Val Gln Ser Ser Gln Lys Ser Lys Asn Phe Pro Leu Glu Asn Gln Gly



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Val Cys Arg Pro Asn Gly Leu Lys Leu Asn Pro Pro Gly Leu Arg Glu

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ttt ccc agt gga tct tcc tcc acc agc agc act cct ctc tcc tcc ccc 309

Phe Pro Ser Gly Ser Ser Ser Thr Ser Ser Thr Pro Leu Ser Ser Pro

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att gta gat ttt tat ttc agt cca gga cct cca agt aac tct cct ctt 357

Ile Val Asp Phe Tyr Phe Ser Pro Gly Pro Pro Ser Asn Ser Pro Leu

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Gly Thr His Val Leu Tyr Pro Ile Pro Glu Ser Ser Ser Asp Ser Pro

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ctc gca ata tca gga gga gaa tct tcc tta ctg cct acc aga cca aca 501

Leu Ala Ile Ser Gly Gly Glu Ser Ser Leu Leu Pro Thr Arg Pro Thr

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Cys Leu Ser His Ala Leu Leu Pro Ser Asp His Ser Cys Thr His Pro

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Glu Asp Cys Ala Phe Ser Ser Pro Phe Arg Lys Asp Glu Gly Ser Asp

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Ser His Phe Thr Leu Asp Pro Pro Gly Ser Lys Lys Met Phe Ser Ser

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aga aac aag gag atg cct att gac caa aaa agc cta aat aag tgt tca 789

Arg Asn Lys Glu Met Pro Ile Asp Gln Lys Ser Leu Asn Lys Cys Ser

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Gln Asp Ser Leu Arg Ser Leu Ser Met His Cys Leu Cys Ala Glu Glu

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aat gcc tct tcc ttt gtc ccc cac aca ctc ttc agg agt cag cca aaa 933

Asn Ala Ser Ser Phe Val Pro His Thr Leu Phe Arg Ser Gln Pro Lys

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tcc gga tgg tct ttc atg ctg aga att cct gag aag aag aat atg atg 981

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Ser Ser Arg Gln Trp Gly Pro Ile Phe Leu Lys Val Leu Pro Gly Gly

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Ile Leu Gln Met Tyr Tyr Glu Gln Gly Leu Glu Lys Pro Phe Lys Glu

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ata cag ctt gat cca tat tgt agg ctt tct gaa ccc aag gtt gag aac 1125

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Phe Ser Val Ala Gly Lys Ile His Thr Val Lys Ile Glu His Val Ser

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tac aca gaa aaa agg aaa tac cat tct aag aca gaa gta gtt cat gaa 1221

Tyr Thr Glu Lys Arg Lys Tyr His Ser Lys Thr Glu Val Val His Glu

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Gly Asn Leu Glu Cys Phe Leu Thr Leu Asn Asp Leu Glu Leu Pro Lys

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cga gat gaa tcc tat tat gag aag gac tca gaa aaa aag ggg att gat 1557

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Ile Leu Asp Tyr His Phe His Lys Cys Val Asn Val Gln Glu Phe Glu

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Leu Arg Ser Cys Asp Asn Ile Arg Ile His Phe Pro Val Pro Ser Gln

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Glu Ser Glu Pro Val Ile Gln Val Thr Val Gly Ser Ala Lys Tyr Glu  
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Gln Phe Ser Val Pro Asp Thr Cys Ala Ser Arg Thr Glu Val Arg Ser  
675 680 685

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gta att gaa gga gtt cgg aat cta ttt gct gaa gaa ggt ata gag gaa 2325

Val Ile Glu Gly Val Arg Asn Leu Phe Ala Glu Glu Gly Ile Glu Glu

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caa gtt tta aaa gac ttg aag cag ctc tgg gaa acc aag gtt ttg cag 2373

Gln Val Leu Lys Asp Leu Lys Gln Leu Trp Glu Thr Lys Val Leu Gln

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Phe Thr Leu Gln Leu Pro His Ser Leu His Gln Thr Leu Gln Ser Ser

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Gly His Leu Tyr Lys Val Asn Val Pro Ile Met Val Thr Gln Thr Ser

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Trp Ser Leu Gln Ala Thr Thr Glu Lys Ser Gln Arg Ile Glu Thr Val

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Leu Glu Asn Ala Thr Ser Asp Ile Leu Val Ser Pro Gly Asn Glu His

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aaa atc gtg cct gaa gct ttg ttg tgt cat cag gaa agt tct cac tat 2949

Lys Ile Val Pro Glu Ala Leu Leu Cys His Gln Glu Ser Ser His Tyr

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Ile Ser Leu Pro Gly Val Val Phe Ser Pro Gln Val Ser Gln Thr Asn

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ctg cat gat gag tcc ctc tcc aca agc cct cat ggg gct ctc cac cag 3093

Leu His Asp Glu Ser Leu Ser Thr Ser Pro His Gly Ala Leu His Gln

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cac gtg act gat att cag ctt cat att ctt aaa aat agg atg tat gga 3141

His Val Thr Asp Ile Gln Leu His Ile Leu Lys Asn Arg Met Tyr Gly

995

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1005

tgt gat tct gta aag caa cca aga aat ata gag gaa ccc agc aac ata 3189

Cys Asp Ser Val Lys Gln Pro Arg Asn Ile Glu Glu Pro Ser Asn Ile

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cct gta tca gag aag gat tct aat tct cag gtg gat tta agc att cgg 3237

Pro Val Ser Glu Lys Asp Ser Asn Ser Gln Val Asp Leu Ser Ile Arg

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gtt act gat gat gat att ggt gaa ata att caa gta gat gga agc ggt 3285

Val Thr Asp Asp Asp Ile Gly Glu Ile Ile Gln Val Asp Gly Ser Gly

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gat aca tct tcc aat gaa gaa ata gga agt aca aga gat gca gat gag 3333

Asp Thr Ser Ser Asn Glu Glu Ile Gly Ser Thr Arg Asp Ala Asp Glu

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aat gaa ttt cta ggg aat att gac ggg gga gat ctg aag gta cct gaa 3381

Asn Glu Phe Leu Gly Asn Ile Asp Gly Gly Asp Leu Lys Val Pro Glu

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1080

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gaa gaa gct gac agt att tca aat gag gat tca gcc aca aac agt agt 3429

Glu Glu Ala Asp Ser Ile Ser Asn Glu Asp Ser Ala Thr Asn Ser Ser

1090 1095 1100 1105 1110 1115 1120 1125 1130 1135 1140 1145 1150 1155 1160 1165 1170 1175 1180 1185 1190 1195

Asp Asn Glu Asp Pro Gln Val Asn Ile Val Glu Glu Asp Pro Leu Asn



1110

1115

1120

tct gga gat gat gtt agt gaa cag gat gtg cca gac ctg ttt gac acg 3525

Ser Gly Asp Asp Val Ser Glu Gln Asp Val Pro Asp Leu Phe Asp Thr

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gat aat gta att gtc tgt cag tat gat aag att cat cga agc aag aac 3573

Asp Asn Val Ile Val Cys Gln Tyr Asp Lys Ile His Arg Ser Lys Asn

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aaa tgg aaa ttc tat ttg aaa gat ggt gtt atg tgt ttt gga ggg aga 3621

Lys Trp Lys Phe Tyr Leu Lys Asp Gly Val Met Cys Phe Gly Gly Arg

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Asp Tyr Val Phe Ala Lys Ala Ile Gly Asp Ala Glu Trp

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3824

&lt;210&gt; 4

&lt;211&gt; 1182

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

Ala Val Gln Ser Ser Gln Lys Ser Lys Asn Phe Pro Leu Glu Asn Gln

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Gly Val Cys Arg Pro Asn Gly Leu Lys Leu Asn Pro Pro Gly Leu Arg

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Glu Phe Pro Ser Gly Ser Ser Ser Thr Ser Ser Thr Pro Leu Ser Ser

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Pro Ile Val Asp Phe Tyr Phe Ser Pro Gly Pro Pro Ser Asn Ser Pro

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Leu Ser Thr Pro Thr Lys Asp Phe Pro Gly Phe Pro Gly Ile Pro Lys

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Ala Gly Thr His Val Leu Tyr Pro Ile Pro Glu Ser Ser Ser Asp Ser

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Pro Leu Ala Ile Ser Gly Gly Glu Ser Ser Leu Leu Pro Thr Arg Pro

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Thr Cys Leu Ser His Ala Leu Leu Pro Ser Asp His Ser Cys Thr His

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Pro Thr Pro Lys Val Gly Leu Pro Asp Glu Val Asn Pro Gln Gln Ala

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Glu Ser Leu Gly Phe Gln Ser Asp Asp Leu Pro Gln Phe Gln Tyr Phe

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Asp Ser His Phe Thr Leu Asp Pro Pro Gly Ser Lys Lys Met Phe Ser

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Ser Arg Asn Lys Glu Met Pro Ile Asp Gln Lys Ser Leu Asn Lys Cys

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Ser Leu Asn Tyr Ile Cys Glu Lys Leu Glu His Leu Gln Ser Ala Glu

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Asn Gln Asp Ser Leu Arg Ser Leu Ser Met His Cys Leu Cys Ala Glu

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Glu Asn Ala Ser Ser Phe Val Pro His Thr Leu Phe Arg Ser Gln Pro

260

265

270

Lys Ser Gly Trp Ser Phe Met Leu Arg Ile Pro Glu Lys Lys Asn Met

275

280

285

Met Ser Ser Arg Gln Trp Gly Pro Ile Phe Leu Lys Val Leu Pro Gly

290

295

300

Gly Ile Leu Gln Met Tyr Tyr Glu Gln Gly Leu Glu Lys Pro Phe Lys

305

310

315

320

Glu Ile Gln Leu Asp Pro Tyr Cys Arg Leu Ser Glu Pro Lys Val Glu

325

330

335

Asn Phe Ser Val Ala Gly Lys Ile His Thr Val Lys Ile Glu His Val

340

345

350

Ser Tyr Thr Glu Lys Arg Lys Tyr His Ser Lys Thr Glu Val Val His

360

375

380

Asp Phe Leu Asp Phe Leu Thr Thr Val Glu Glu Glu Leu Met Lys Leu  
385 390 395 400

Pro Ala Val Ser Lys Pro Lys Lys Asn Tyr Glu Glu Gln Glu Ile Ser  
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Leu Glu Ile Val Asp Asn Phe Trp Gly Lys Val Thr Lys Glu Gly Lys  
420 425 430

Phe Val Glu Ser Ala Val Ile Thr Gln Ile Tyr Cys Leu Cys Phe Val  
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Asn Gly Asn Leu Glu Cys Phe Leu Thr Leu Asn Asp Leu Glu Leu Pro  
450 455 460

Lys Arg Asp Glu Ser Tyr Tyr Glu Lys Asp Ser Glu Lys Lys Gly Ile  
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Asp Ile Leu Asp Tyr His Phe His Lys Cys Val Asn Val Gln Glu Phe  
485 490 495

Glu Gln Ser Arg Ile Ile Lys Phe Val Pro Leu Asp Ala Cys Arg Phe  
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Glu Leu Met Arg Phe Lys Thr Leu Tyr Asn Gly Asp Asn Leu Pro Phe  
515 520 525

Ser Leu Lys Ser Val Val Val Val Gln Gly Ala Tyr Val Glu Leu Gln  
530 535 540

Ser Leu Arg Ser Cys Asp Asn Ile Arg Ile His Phe Pro Val Pro Ser

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575

Gln Trp Ile Lys Ala Leu Trp Thr Met Asn Leu Gln Arg Gln Lys Ser

580

585

590

Leu Lys Ala Lys Met Asn Arg Arg Ala Cys Leu Gly Ser Leu Gln Glu

595

600

605

Leu Glu Ser Glu Pro Val Ile Gln Val Thr Val Gly Ser Ala Lys Tyr

610

615

620

Glu Ser Ala Tyr Gln Ala Val Val Trp Lys Ile Asp Arg Leu Pro Asp

625

630

635

640

Lys Asn Ser Ser Leu Asp His Pro His Cys Leu Ser Tyr Lys Leu Glu

645

650

655

Leu Gly Ser Asp Gln Glu Ile Pro Ser Asp Trp Tyr Pro Phe Ala Thr

660

665

670

Val Gln Phe Ser Val Pro Asp Thr Cys Ala Ser Arg Thr Glu Val Arg

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Ser Leu Gly Val Glu Ser Asp Val Gln Pro Gln Lys His Val Gln Gln

690

695

700

Arg Ala Cys Tyr Asn Ile Gln Pro Lys Leu Tyr Arg Ser Val Ile Glu

705

710

715

720

Glu Gln Val Leu Lys Asp Leu Lys Gln Leu Trp Glu Thr Lys Val Leu

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745

750

Gln Ser Lys Ala Thr Glu Asp Phe Phe Arg Asn Ser Ile Gln Ser Pro

755

760

765

Leu Phe Thr Leu Gln Leu Pro His Ser Leu His Gln Thr Leu Gln Ser

770

775

780

Ser Thr Ala Ser Leu Val Ile Pro Ala Gly Arg Thr Leu Pro Ser Phe

785

790

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Thr Thr Ala Glu Leu Gly Thr Ser Asn Ser Ser Ala Asn Phe Thr Phe

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Pro Gly Tyr Pro Ile His Val Pro Ala Gly Val Thr Leu Gln Thr Val

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Ser Gly His Leu Tyr Lys Val Asn Val Pro Ile Met Val Thr Glu Thr

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Ser Gly Arg Ala Gly Ile Leu Gln His Pro Ile Gln Gln Val Phe Gln

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Gln Leu Gly Gln Pro Ser Val Ile Gln Thr Ser Val Pro Gln Leu Asn

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Pro Trp Ser Leu Gln Ala Thr Thr Glu Lys Ser Gln Arg Ile Glu Thr

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890

895

Val Leu Gln Gln Pro Ala Ile Leu Pro Ser Gly Pro Val Asp Arg Lys

915

920

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His Lys Ile Val Pro Glu Ala Leu Leu Cys His Gln Glu Ser Ser His

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Tyr Ile Ser Leu Pro Gly Val Val Phe Ser Pro Gln Val Ser Gln Thr

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Asn Ser Asp Val Glu Ser Val Leu Ser Gly Ser Ala Ser Met Ala Gln

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Asn Leu His Asp Glu Ser Leu Ser Thr Ser Pro His Gly Ala Leu His

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Gly Cys Asp Ser Val Lys Gln Pro Arg Asn Ile Glu Glu Pro Ser Asn

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Arg Val Thr Asp Asp Asp Ile Gly Glu Ile Ile Gln Val Asp Gly Ser

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Gly Asp Thr Ser Ser Asn Glu Glu Ile Gly Ser Thr Arg Asp Ala Asp

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Glu Asn Glu Phe Leu Gly Asn Ile Asp Gly Gly Asp Leu Lys Val Pro

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Ser Asp Asn Glu Asp Pro Gln Val Asn Ile Val Glu Glu Asp Pro Leu  
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Asn Ser Gly Asp Asp Val Ser Glu Gln Asp Val Pro Asp Leu Phe Asp  
1125 1130 1135

Thr Asp Asn Val Ile Val Cys Gln Tyr Asp Lys Ile His Arg Ser Lys  
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Ala Phe Pro Arg Arg Thr Ser Phe Asn Thr

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Met His His His His His His Val

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29